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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,398	02/06/2004	Toshio Matsumoto	P24925	5023
7055 7590 04/29/2008 GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191				
EXAMINER LOPEZ, CARLOS N				
ART UNIT		PAPER NUMBER		
1791				
NOTIFICATION DATE		DELIVERY MODE		
04/29/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary**Application No.**

10/772,398

Applicant(s)

MATSUMOTO, TOSHIO

Examiner

Carlos Lopez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-7 and 9-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7 and 9-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/13/08 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 7, 9, 11-12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 63-40782 ('782) in view of Gurak (US 4,889,670) and Alm et al (US 4,795,764). '782 et al discloses a method of making porous ceramic sintered bodies. The method, as disclosed in example 1, comprises: 1) preparing a slurry comprising a calcium phosphate based ceramic powder, a deflocculating agent (deemed as the claimed water-soluble high molecular compound) and a foaming agent (deemed as the claimed nonionic surface active agent ; (2) stirring said slurry vigorously to froth said slurry; and (3) solidifying the frothed slurry into a gel, and (4) drying and sintering said gel. It is noted that the deflocculating agent used in example one, is

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deemed as a polyacrylic acid, see page 2 of the certified translation, which as noted by applicant in page 7 of the specification can be used as a water-soluble high molecular compound.

'782 does not specifically disclose a degreasing step by heating the green block to temperature of 300 to 900°C. However, at page 6 of '782, the green block is first dried to a temperature of 40°C and then it is sintered by heating the green block to a temperature of 1000 to 1300°C at a rate of 300°C/hr. As the temperature is increased to its target sintering temperature, the green block is exposed to the claimed range of 300 to 900°C. Hence, it would be obvious to a person of ordinary skill in the art to have expected the claimed degreasing to occur in the process of '782 in view that the green block is exposed to the same claimed temperature range as applicant's green block.

'782 is silent disclosing the use of a surfactant. However, Gurak at Col. 8, lines 39ff discloses that the surface cracking in a green ceramic may be overcome by increasing the amount of surfactant in order to form porous ceramic bodies. Gurak further recognizes that the type of surfactant selected may be used as a foaming aid. Claim 16 of Alm discloses that a type of surfactant that aids in foaming is the claimed N,N-dimethyldodecylamine oxide.

Hence, at the time the invention was made it would have been obvious to a person of ordinary skill in the art to have used a known surfactant having foaming aid properties as shown by Alm and applied it to the '782 process as taught by Gurak in order to obtain a ceramic green body having reduce surface cracks that seeks to provide froth slurry in order to also form a porous ceramic.

Alternatively, it has been held that "a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product of not innovation but of ordinary skill and common sense." KSR International Co. v. Teleflex Inc., 550 U.S. 820 USPQ2d 1385 (2007).

In the instant case applicant is merely using a known principle in the art of using surfactants that both reduces surface cracking of a green ceramic and aids in foaming and providing that known surfactant, N,N-dimethyldodecylamine oxide, in the making of porous ceramic. Hence, applicant's process is not of innovation but merely ordinary skill and common sense.

Applicant is also referred to US 5,240,659 ('659) at Col. 6, lines 12ff showing degreasing is done at 700°C in order to remove any residual organic substances in the green block. It is noted to applicant that '659 is being cited as an alternate showing that degreasing is already known in the art, but is not a basis for the instant rejection because '782 already shows degreasing.

As for claim 2, the calcium phosphate used has a particle size of 3µm or less, see example 1.

As for claims 4 and 12, see bridging paragraph of pages 5-6 noting the claimed fatty acid alkanolamide which encompasses the claimed oxide recited in claim 12.

As for claim 7 '782 does not disclose the claimed stirring conditions. However, in view that '782 stir the slurry to provide a froth, it would have been obvious to a person of

ordinary skill in the art to have conducted routine experiments to determine the optimum stirring conditions

As for claim 9, '782 does not disclose the use of a foaming agent free of a metal ion or sulfate.

As for claim 11, page 1 of the certified translation notes of using a hydroxyapatite.

As for claim 13, see above noting drying prior to degreasing.

Claims 1, 3, 7, 9, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imura (GB 2348872) in view of Gurak (US 4,889,670) and Alm et al (US 4,795,764) or alternatively over Imura (US 6,340,648) in view of Gurak (US 4,889,670) and Alm et al (US 4,795,764). For citation purposes, the GB 2348870 patent will be used. Imura discloses a method of making a calcium phosphate porous sintered body as a substitute for bone or tooth material. The method, as disclosed in example 1, comprises: 1) preparing a slurry comprising hydroxyapatite, a cross-linking polymerizable organic compound (deemed as the claimed water-soluble high molecular compound) and a foaming agent (deemed as the claimed nonionic surface active agent; (2) stirring said slurry vigorously to froth said slurry; and (3) solidifying the frothed slurry into a gel, and (4) drying and sintering said gel.

Imura's GB and US patent do not disclose the claimed degreasing. However, example 1 discloses that after drying the green block, the block is then sintered at 1200°C. Hence, it would be obvious to a person of ordinary skill in the art to have expected the claimed degreasing to occur in the process of Imura in view that the green

block would be exposed to the same claimed temperature range as applicant's green body.

Imura is silent disclosing the use of a surfactant. However, Gurak at Col. 8, lines 39ff discloses that the surface cracking in a green ceramic may be overcome by increasing the amount of surfactant in order to form porous ceramic bodies. Gurak further recognizes that the type of surfactant selected may be used as a foaming aid. Claim 16 of Alm discloses that a type of surfactant that aids in foaming is the claimed N,N-dimethyldodecylamine oxide.

Hence, at the time the invention was made it would have been obvious to a person of ordinary skill in the art to have used a known surfactant having foaming aid properties as shown by Alm and applied it to the Imura process as taught by Gurak in order to obtain a ceramic green body having reduce surface cracks that seeks to provide froth slurry in order to also form a porous ceramic.

Alternatively, it has been held that "a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product of not innovation but of ordinary skill and common sense." KSR International Co. v. Teleflex Inc., 550 U.S. 820 USPQ2d 1385 (2007).

In the instant case applicant is merely using a known principle in the art of using surfactants that both reduces surface cracking of a green ceramic and a aids in foaming and providing that known surfactant, N,N-dimethyldodecylamine oxide, in the making of

porous ceramic. Hence, applicant's process is not of innovation but merely ordinary skill and common sense.

Applicant is also referred to US 5,240,659 ('659) at Col. 6, lines 12ff showing degreasing is done at 700°C in order to remove any residual organic substances in the green block. It is noted to applicant that '659 is being cited as an alternate showing that degreasing is already known in the art, but is not a basis for the instant rejection because '782 already shows degreasing.

As for claim 3, page 10 of Imura notes using methyl cellulose as the cross-linking polymerizable organic compound.

As for claim 7, Imura does not disclose the claimed stirring conditions. However, in view that both Imura stirs the slurry to provide a froth, it would have been obvious to a person of ordinary skill in the art to have conducted routine experiments to determine the optimum stirring conditions

As for claim 9, Imura is silent disclosing a metal or sulfate group.

As for claim 11, see above noting the claimed hydroxyapatite.

Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imura (GB 2348872 or US 6,340,648) in view of Gurak (US 4,889,670) and Alm et al (US 4,795,764) in further view of JP 3-131580 ('580); or JP 63-40782 (782) in view of Gurak (US 4,889,670) and Alm et al (US 4,795,764) in further view of JP 3-131580 ('580). The British and US patent of Imura and JP '782 are silent disclosing the claimed % weight of the foaming agent (surface active agent), thickening agent (high molecular

compound), and ceramic. However, JP '580 discloses the claimed %weight. In particular, example 1 of '580 notes of using 18-45% of a ceramic powder, .5% of foaming agent and .5% of a thickening agent to subsequently provide for a porous sintered ceramic body that can be used as a bone filler or material. At the time the invention was made it would have been obvious to a person of ordinary skill in the art to have used known compositions of foaming agents, thickening agents and ceramic as taught by '580 absent any indication by either Imura or '782 in order to make the desired porous ceramic sintered body used in synthetic bone material.

As for claim 6, as shown above adding the %wt of the thickener, ceramic and foaming agent results in a slurry being comprised of at least 19%wt of said components and up to 46%wt.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imura (GB 2348872) in view of Gurak (US 4,889,670), Alm et al (US 4,795,764) in further view of WO 98/15505 ('505) or Imura (US 6,340,648) in view of Gurak (US 4,889,670), Alm et al (US 4,795,764) in further view of WO 98/15505 ('505); or JP 63-40782 (782) in view of Gurak (US 4,889,670), Alm et al (US 4,795,764) in further view of WO 98/15505 ('505). The British and US patent of Imura and JP '782 are silent disclosing the claimed step of passing gas through the slurry of ceramics, foaming agent and thickener to forth the desired froth. However, '505 discloses a method of stirring the claimed slurry and introducing air to provide froth, see example 1 of '505 and subsequently form artificial body parts, bone.

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to introduce air into the slurry of Imura or '782 as taught by '505 in order to promote froth formation.

It is clear from the disclosure of '505 that froth formation can be aided by the introduction of air, hence it would be obvious to a person of ordinary skill in the art to have done so in order to promote bubble formation as sought by Imura and '782.

Response to Arguments

Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Lopez whose telephone number is 571.272.1193. The examiner can normally be reached on Mon.-Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571.272.1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Carlos Lopez/
Primary Examiner
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CL